Cheatography

Homeostasis Cheat Sheet Cheat Sheet

by akarasan via cheatography.com/213593/cs/46496/

What is Homeostasis?

Dynamic equilibrium that maintains the body's internal conditions within a stable range around a set point

Primary Types of Tissue

Type	Divisions	Function
Muscle	cardiac, smooth, skeletal	contraction
Nervous	central, peripheral	signaling
Epithelial	epithelial sheets, glands	exchange, division, secretion, absorption
Connective	bone, tendons, blood	anatomical structural support

Organs are made of a combination of all tissue types

Cell-Cell Communication

Name	Type	Function
Gap Junctions	Direct Intercellular Communication	specialized intercellular connection that directly links the cytoplasm of two adjacent cells,
Transient Direct Linkup	Direct Intercellular Communication	surface molecules of nearby cells join temporarily before breaking away
Autocrine Secretion	Direct Intracellular Communication	cell releases chemical messengers that bind to releasing cell, regulating its own function
Paracrine Secretion	Indirect Intercellular Communication	cell releases chemical messengers that act on nearby cells
Neurotransmitter Secretion	Indirect Intercellular Communication	neuron releases neurotransmitters to communicate with other neurons and target cells

Endocrine vs. Nervous Signaling

	Nervous	Endocrine
Arrangment	wired: neurons and their targets are mostly fixed	wireless: glands and their targets are positioned throughout the body
Transmission Locaiton	synaptic cleft	blood
Action Distance	short distance	long distance
Speed	fast	slow

The interplay between the endocrine and nervous system is significant to maintaining homeostasis

Body Systems

Levels of Body System Organization

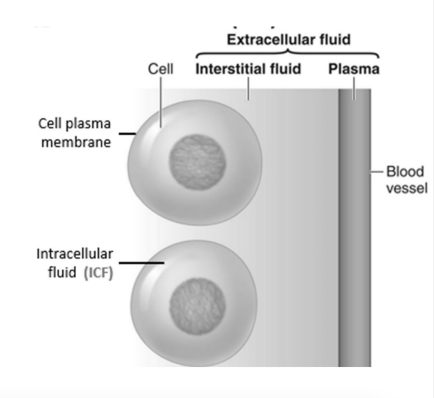
- Atom
- Molecule
- Organelle
- Cell
- Tissue
- Organ
- System
- Organism

All system layers besides atoms and molecules are dependent on water!

Definitions

Circulatory System	heart, blood vessels, and blood
Digestive System	mouth, esophagus, stomach, intestines, involved organs
Respir-atory System	lungs and airways
Urinary System	kidneys and involved organs
Skeletal System	bones and joints
Immune System	WBCs and lymphoid organs
Muscular System	skeletal muscles
Integu-mentary System	skin
Nervous System	brain, spinal cord, nerves, and sense organs
Endocrine System	hormone secreting glands
Reprod-uctive System	male and female sex organs

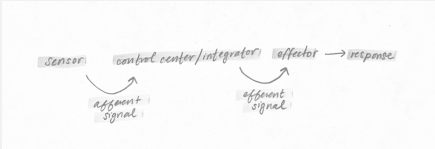
3 Homeostatic Fluids



Homeostasis involves the exchange of signaling molecules through three main fluids: intracellular
fluid, the interstitial fluid, and blood plasma

Negative Feedback Example: Temperature	
Pathway Segment	Analogous Physiological Structure/Response
Stimulus	body temperature rises
Sensors	temperature sensitive cells
Afferent Pathway	change in body temperature sent to control center
Control Center	thermoregulatory center in brain
Efferent Pathway	signal sent to effector organs
Effectors	sweat glands
Response	body begins to sweat and sweat evaporates
Result	body temperature falls

Homeostatic Pathway



Sensor: Sensor picks up a deviation from the set point
Afferent Signal: sends information from sensor to Control Center
Control Center: integrates and processes signal
Efferent Signal: sends information from Control Center to Effector
Effector: initiates response to remediate deviation
Response!

Term	Definition
Dynamic Constancy	internal body conditions fluctuate about a set point rather than being fixed
Negative Feedback	change in a variable triggers a response to oppose the change, bringing system back to set point range
Positive Feedback	change in a variable triggers a furthering in response in the same direction away from the set point
Intrinsic Control Systems	homeostatic control pathways that are built into an organ itself
Extrinsic Control Systems	homeostatic control pathway is maintained outside of the target organ
Feedfo-rward Mechanism	homeostatic mechanisms that predicts a change, initiating a response and through body rhythms
Pathophys-iology	physiological changes in bodily functions due to disease or injury
Hormone	signaling molecule secreted by endocrine glands that travel through the blood to reach target organs and cells
alpha cells	pancreatic cells that release glucagon
beta cells	pancreatic cells that release insulin

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